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ABSTRACT

This booklet on environmental decisions is one of a series in environmental education for grades K-12. The activities contained in this booklet are designed to identify components of complex decision making and to develop the idea of responsibility for decisions. Six basic concepts are listed, along with the behavioral objectives, subject areas, key words, and definitions associated with each. Three activity options are given for each concept. Information for these activities includes materials and resources, procedures, discussion questions, further activities, and sample worksheets. The activities are interdisciplinary and designed for students in grades 6-8. (MA)

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ENVIRONMENTAL DECISIONS

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ENVIRONMENTAL EDUCATION

VALUES FOR THE FUTURE

ANTIOCH COMMUNITY SCHOOL DISTRICT 34

TITLE IV C ESEA

SE 023 453

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Synopsis

Decisions 8: At the completion of this unit the student will be able to show examples of why we must look beyond obvious symptoms and attack the root cause in order to solve a problem effectively.

Option 1 - Students study the problem of automobile air pollution and the attempts to solve it. 3
Option 2 - Students discuss current issues of controversy and are asked to participate in a values clarification exercise to illustrate the complexities of decision making. .. 7
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Decisions 9: At the completion of this unit the student will be able to use history in making an effective environmental decision.

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EXPLANATION OF CONCEPT AREA

DECISIONS - For students to be effective in solving environmental problems they must have numerous experiences in a learning situation. By solving carefully selected problems they acquire the necessary skills and build their confidence.

Program activities begin by defining decisions and the responsibility for decisions.

In the second sequence we identify the aspects of sound decisions and their relationship to individual attitudes. We also explore the ideas of consequences and time span for decisions.

The junior high program attempts to identify the various components of complex decisions as they relate to decision-makers. From this we develop the ideas of effects and enforcement of decisions as they relate to individuals, society, and the law. We also begin to develop the concept of responsibility for decisions.

In high school we devote much of our efforts to involving students actively in the decision-making process. They are encouraged to practice their personal values and examine their relationship to society in general. Decisions take on new significance as the student becomes involved with groups whose interests may be different from his. We also explore the effect of using laws to effect environmental improvement.

BEHAVIORAL OBJECTIVE:

At the completion of this unit the student will be able to show examples of why we must look beyond obvious symptoms and attack the root cause in order to solve a problem effectively.

SUBJECT AREAS:

Language Arts, English, Social Studies

KEY WORDS:

Population control

Abortion

OPTION #1 -- (2-3 days)

MATERIALS AND RESOURCES

At the Garage (included)
The Best Gas-saver Of All (included)

Do-It-Yourself Car Pollution Test, Car Care Council, Detroit, Michigan
Its Your Problem, Air Pollution, National Tuberculosis and Respiratory Disease Assn.
Your Auto and Air Pollution, Washington State Department of Ecology
Should Americans Be Pried Out of Their Cars?, Conservation Foundation Newsletter, April 1975
A Primer on Air Pollution, Mobil Oil Corporation
Public Interest Report on Air Pollution, Environmental Alert Group
The Auto, Environment and Values, Minnesota Environmental Sciences Foundation Inc.

PROCEDURE:

1. The technique here is to get students to realize that a technological solution is useless if the real cause of a difficulty is human attitude. There is every likelihood that such a solution will do little more than address itself to the immediate causes and overlook the underlying causes.

2. Consider, as a case in point, pollution from automobile engines. Having identified this as a significant problem, ask the students to suggest ways to cut down on harmful emissions from auto engines. If they have trouble identifying solutions, you might find it helpful to divide the class into five or six groups and have each group research one of the following:

   a) the outlawing of large autos
   b) the manufacturing of more efficient engines
   c) the developing of cleaner fuels
   d) the instituting of better mass transit systems
   e) the imposing of rationing or higher gasoline taxes to prevent unnecessary trips

3. After one or two periods (using materials of the type found in the resource list) the groups can share their ideas as to the feasibility of each solution. They might even rate them according to their probably effectiveness.

4. Having done this, they probably will believe that they have gone to the root of the problem. In reality, they will have treated only the symptoms. In most cases they will have directed their attention to the immediate causes of the pollution; that is, to causes that are largely physical in nature.

5. At this point the teacher can explain that all of these remedies have been suggested before. In effect, the class will probably have come up with nothing new. With a minimum of prodding they should come to realize that the real culprit (or root cause) is that cussed creature called man. Have the students (in the same groups if you wish) determine who is holding up the implementing of these practical solutions. They might identify such interests as manufacturers, legislators, or even the motorists themselves.

OPTION #1 cont.

6. As a rule, these reasonable solutions are blocked because of veiled financial interests or downright apathy. As a follow-up activity, then, you might have the students compose and send letters to responsible journals, to our federal legislators, or even to vested interest groups like executives of oil companies or auto manufacturing firms. The students should learn from this exercise that all the technology and legal resources are useless if the root of the problem is human indifference.

DISCUSSION QUESTIONS (Add your own as necessary)

1. If our technology is so advanced, why are we still using engines and fuels that are so harmful to the environment?

2. If we have the technology to improve our mass transit systems, why have we let the Chicago expressways become so hopelessly overcrowded?

3. What financial interests might be blocking any drastic changes in the structure of automobile engines? Why?

4. Why do legislators frequently drag their feet where environmental legislation is concerned?

5. What can be done to dramatize the urgency of the problem?

6. What can be done to develop responsible environmental attitudes?

AT THE GARAGE

When Patty and her Dad arrived at the agrage, there was a lot of noise of engines being worked on and tools being dropped on the floor. It was hard to hear what her Dad and Mr. Frelsen, the mechanic, were talking about. After her father had done his business, they all went into Mr. Frelsen's office and had a bottle of pop.

"Your father says that you're pretty upset about all the time Jimmy spends on cars," said Mr. Frelsen.

"Well," I said, "it does seem kind of a waste to me. And I can't believe that it makes the car all that better."

"You'd be surprised," replied Mr. Frelsen. "Old cars need a lot of attention if they're going to operate efficiently and not pollute the atmosphere. Right now, the air pollution problem from cars has to do with the 50 million older cars out on the roads."

"You mean old clunkers like Mark and Jimmy work on?"

"Yes, usually. Not only were they made before there were so many new pollution control devices, but they are usually maintained poorly and contribute a lot of the invisible and odorless gasses that are the primary cause of smog and air pollution haze. Right now, 85% of auto air pollution comes from cars that are three years old or over."

"But we can't all go out and buy new cars every three years," protested my father.

"No, that is not what I'm saying," replied Mr. Frelsen. "A major factor in controlling air pollution is the care that people give to their cars. If people would take regular care of their cars, a major step would be taken in reducing air pollution."

Mr. Frelsen showed Dad and me a chart from a recent national study.

OF CARS TESTED AT RANDOM:

27% needed the PCV valve serviced or replaced
41% had poor idle adjustments
40% had dirty air filters
24.7% of the automobile chokes did not work
50.5% of the spark plugs needed service or replacement

Taken from The Auto, Environment and Values, Minnesota Environmental Sciences Foundation Inc.

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THE BEST GAS-SAVER OF ALL

Of course, the best way to save gas is to not use it at all. Car pools are great ideas, but people have a hard time actually using one. Simply suggesting that people form car pools usually results in nothing more than a few conversations. There are usually very specific reasons why people use or do not use car pools.

Can you identify the forces working for and against a car pool in your family or neighborhood? Ask your parents and pool your information with others in your class. Some general forces have already been listed to get you started.

Forces working toward the establishment of a car pool	Forces working against the establishment of a car pool
Save gas	People would have to leave for work at the same time.
Save money	People might have to ride with people they didn't like.
Only one person has to drive each day.	

Taken from The Auto, Environment and Values. Minnesota Environmental Sciences Foundation Inc.

OPTION #2 - 3-5 days

NO SPECIFIC MATERIALS

PROCEDURE:

1. Have the students research the pros and cons of any controversial issue. For example: gun control, bussing, corporal punishment in schools, coal as an energy source, etc.

2. Select a pro and con team and debate the issue.

3. Have the groups reverse the viewpoints and continue debate.

4. Have all students write a short position paper on their conclusions.

5. Use values clarification strategy, "Values Continuum". See values book for complete list of strategies.

VALUES CONTINUUM PROCEDURE:

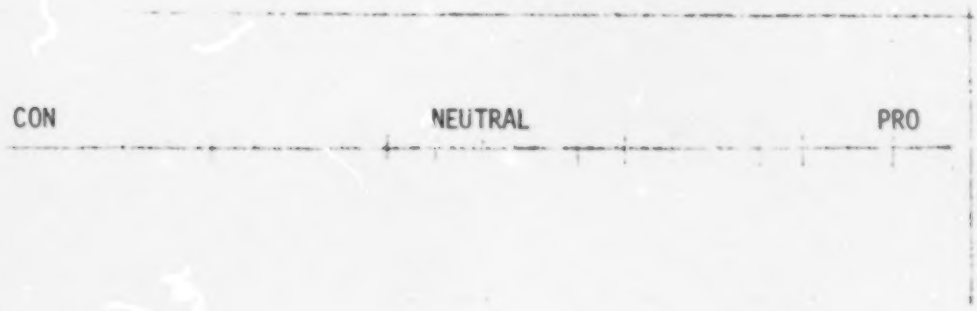
1. Students stand up.

2. Use the room as areas of opinion, i.e. the middle of the room is neutral, one wall pro, one wall con, and all areas in between degrees of pro and con.

   NOTE: Teacher should make note the divergent opinion in the debate to use in the values continuum.

3. Propose the issue. For example, all those completely against gun control stand against the south wall, all those completed for gun control stand against the north wall and those who are in between, stand between the walls.

   NOTE: This is a values continuum. Put a diagram of the room on the blackboard. Explain that depending on where the student stands in the room they will demonstrate the degree of pro or con they are on every issue.



OPTION #2 cont.

DISCUSSION QUESTIONS

Values clarification is not a debate but rather a forum in which each student should feel comfortable to express their opinions openly. Expalin to the students that wherever they stand on the values continuum they should be ready to explain their position. Ask the students to explain why they are standing at a particular point. It is advisable that you start with the extremes and then move to the less extreme opinions. At no time should you allow students to debate other students.

After you have a number of opinions that represent the scope of the class, ask if any students would like to change their position. After the students have changed positions (if any) this completes the exercise.

OPTION #3

MATERIALS AND RESOURCES

Alternatives and Headlines

PROCEDURE:

As the headlines will clearly show, the cause of the present problem is a deadly virus. Not one of the suggested solutions really addresses itself to the question of what to do about the virus. If you can get your class to choose one of these solutions as the best available alternative, you will be able to demonstrate that they are treating symptoms rather than the root cause of the problem.

1. Read and explain the headlines.

2. Distribute the list of alternatives.

3. Ask the students to decide quickly which alternative they would choose. Encourage an open debate on which alternative is the best way out of the problem. Clearly, all of the alternatives are bad. Hopefully, sometime during the debate one of the students will suggest that perhaps they ought to consider an approach that will attack the virus rather than giving up on people or trees.

4. If no one makes such a suggestion, you might tell the class that their problem solving technique has been defective. Ask them what fundamental error has led to bad problem solving in this case.

5. It should become obvious to them that a crash research program on how to kill the virus is the only solution that makes sense. If you have to remind them of this, their decision making techniques need a great deal of work.

DISCUSSION QUESTIONS

1. What did the debate bring to light about our decision making procedures?

2. What have we learned about our values?

3. To what extent were we willing to let the scientific community try to solve the problem?

4. Did the debate offer any significant insights into environmental problems?

5. Did any prejudices come to light?

6. Can you think of any other environmental decisions that have led to failure because they did not direct their attention to the root cause of the problem?

HEADLINES AND ALTERNATIVES

Headlines #1 - Today an unknown object landed in the Colorado mountains. It is believed to be a spaceship from another planet. We now take you to an on-the-scene report from TY DEBOL.

> "This is Ty Debol reporting from the Colorado mountains where a 'UFO' has landed. It is a small object the size of a basketball. Little is known about its metallic makeup. Scientists are here now studying its ------Oh, my God -- pop!"

Headlines #2 - Outer space disease released on earth, now known as Catch-yourluncha Strain. The following are its characteristics:

1. The virus is taken in by breathing. Nothing filters it out.
2. The virus causes humans to expand and burst within 24 hours.
3. The virus gains strength by an interaction with trees.
4. The further from trees it is, the weaker it gets. At 150 miles there is no effect.
5. Green-eyed people are immune.

There are three possible alternatives which have been developed. Your job is to read the alternatives and decide quickly on one.

Alternative #1 - Gorgeous Green-eyed Gus

1. We must preserve the trees.
2. We cannot all move to the city because of all the problems that would be created.
3. Let all the people die except "green eyes".

Alternative #2 - Plastic Pamela Pinetree

1. We must preserve human life.
2. We cannot all move to the city because of all the problems that would be created.
3. Destroy all the trees.

Alternative #3 - Urbaine Urving Ugotcha

1. We must preserve trees and human life.
2. We must all move to the city.
3. Destroy the trees within a radius of 150 miles of the city.

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BEHAVIORAL OBJECTIVE:

At the completion of this unit the student will be able to use history in making an effective environmental decision.

SUBJECT AREAS:

Science, Biology, Social Studies

OPTION #1 - two to three days - no specific materials

PROCEDURE:

Hypothetical problem: There is a river flowing between two lakes in the immediate area. After checking the indicators, we have the following information:

	Condition	Preferred
Temperature	75°F maximum over one week	45 - 60°F
Dissolved Oxygen	Ranges from 2 PPM - 8 PPM during a 24-hour period	above 7 PPM minimum
pH	Generally above 8.0	5-9 are extremes tolerated
Algae	Very abundant Infrequent algae blooms	Moderate amounts
Coliform	Above acceptable standards	Partial body contact quality

The history of the area reveals the following:

1. The two lakes used to be smaller valleys until they were dammed to make the lakes (1853).
2. The water leaves the dam at the base which is 20 feet below the surface of Lake Antioch.
3. When first formed there were no developments on the shores, except a small state park on the east shore of Lake Antioch. This park is five times its original size.
4. Farming began on the north shore in 1875.
5. The remainder of the shore is heavily developed as single family homes.
6. The depth of the lakes and river have decreased rapidly in the last 40 years.
7. Sequoit River drains 5000 acres of land to the north of Lake Antioch.
8. The town and industrial park use the river as a means of getting rid of rainfall and system overflow.
9. The city sewage plant serves only the village proper.

OPTION #1 cont.

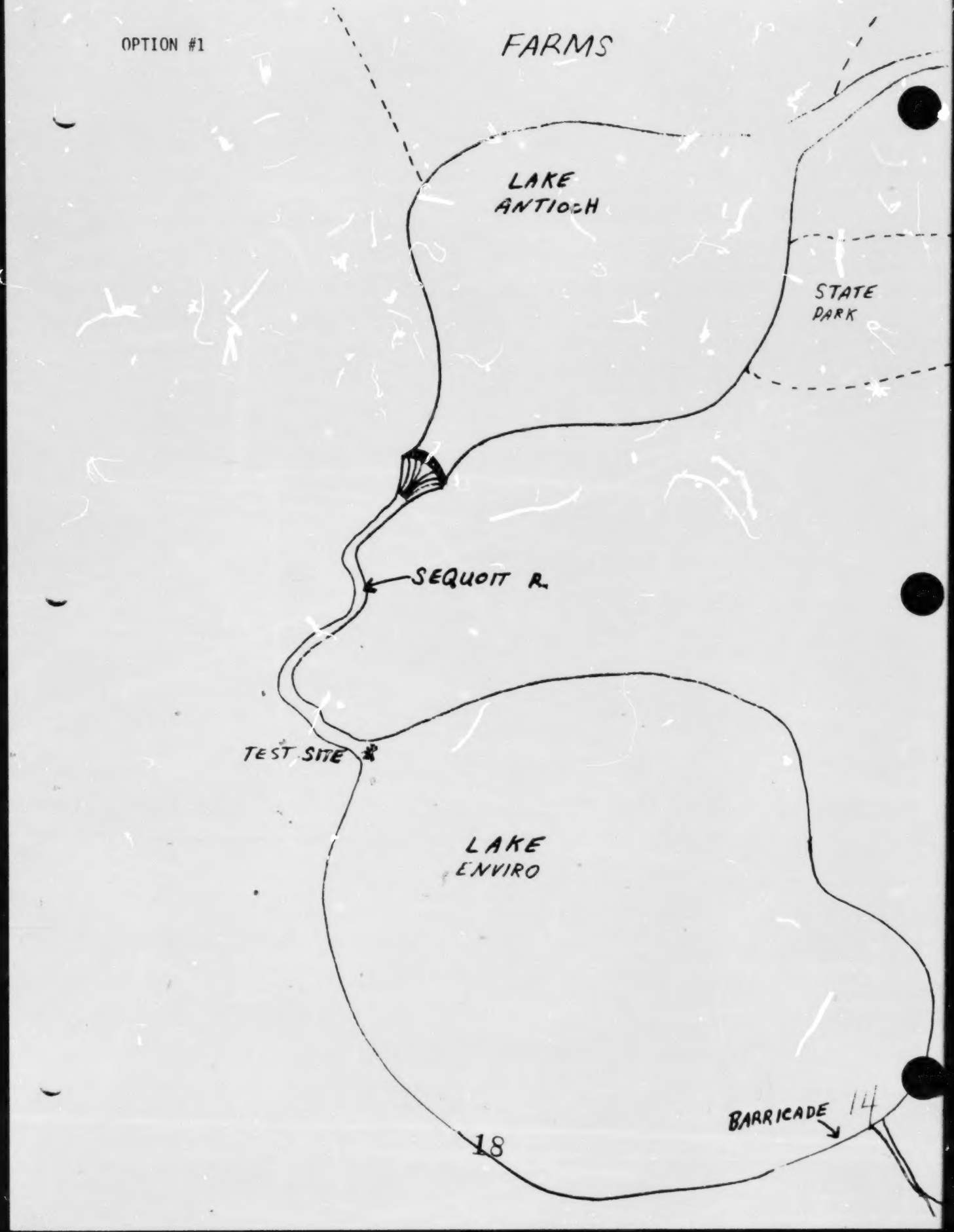
10. All of the homes around the lakes are on septic fields built 15 years ago.
11. The farms have had great increases in yield in the past 10 years.
12. There were many more fish caught 20 years ago than are caught today.
13. The lake was opened to power boating 10 years ago.

DETERMINE A COURSE OF ACTION TO HELP SOLVE THE PROBLEM.

DISCUSSION QUESTIONS

1. What are the probably causes of the pollution? Septic system, power boats, garbage, heavy use, industrial waste, field run-off? FIND OUT!
2. Suggest a possible solution.
3. Is your solution practical? Why?
4. Who will be affected by your decision?
5. Must we concern ourselves with the impact of our solution or will it produce other equally undesirable effects?
6. Are there any other examples of past projects that would give us insight to a proper solution to our problems?
7. Where can we find leads for case studies?
8. After finding case studies and applying them to our situation, would you recommend an alteration of our original decision?

OPTION #1


FARMS
LAKE
ANTIOCH
STATE
PARK
SEQUOIT R.
TEST SITE
LAKE
ENVIRO
BARRICADE
14
18

OPTION #2 - two to three days

MATERIALS AND RESOURCES

Graph paper and pencils
Year by year rainfall amounts since 1880
Soil profile data
Crop data
Farm yield data

Soil and Water Conservation District

PROCEDURE:

1. Divide the class into groups of two or three.

2. Present the following problem:

   You are a farmer in the Midwest and you must make a decision of whether you should plant a crop on your land or raise cattle. Your determining factors will be based upon the above data, i.e. a lot of rainfall, crops grown or little rainfall, cattle raised.

3. Have the students research and record the data as far back as they can.

4. Once the information is obtained have the students line graph their results having the horizontal axis represent years and the vertical axis represent the various amounts.

   NOTE: The students should find a definite pattern. For example, every twenty years the Midwest enters a drought situation.

5. Based upon the above information, have the students speculate on the possibility of the future in this area.

6. Have the students present their graphs and write statements about their decisions and why they made them.

7. Open for discussion.

DISCUSSION QUESTIONS

1. Have we made logical decisions based upon information obtained?

2. Are our decisions better than they would have been without this information?

3. Are our decisions easier to defend? Why?

4. Do farmers consider information like this to determine what types of crops to grow?

5. Do you think you will look for information the next time you are asked to make an important decision? Why or why not?

6. On a larger scale is it important that countries look at history before they make decisions that might influence many lives?

7. Can anybody tell how important history is to understanding the present?

OPTION #3

MATERIALS AND RESOURCES

Graphs on energy, population, autos, and solid waste

PROCEDURE:

1. Divide the class into eight groups.

2. Assign each group a topic.

   a. Two groups will be assigned population.
   b. Two groups will be assigned energy.
   c. Two groups will be assigned automobiles.
   d. Two groups will be assigned solid waste.

3. Have the groups speculate the answers to the following questions:

   a. Population group

      (1) What was the life expectancy in 1900, 1920, 1940, and 1970?
      (2) Is there a trend to life expectancy?
      (3) What do you think it will be in 1980, 1990, and 2000?

   b. Solid waste group

      (1) What was the tonnage of solid waste in 1940, 1960, and 1970?
      (2) Is there a trend to these amounts?
      (3) What do you think it will be in 1980, 1990, and the year 2000?

   c. Energy group

      (1) What hours of the day is electricity used the most? Why?
      (2) What creates electricity?
      (3) How many barrels of oil did we use in 1900, 1940, 1970?
      (4) How many barrels will we produce in 2000, 2020, 2060?

   d. Auto group

      (1) How many autos were there in 1900, 1920, 1930, 1940, 1950, 1960, 1970?
      (2) How many autos will there be in 1980, 1990, 2000?
      (3) What changes in autos will be made by 1980, 1990, 2000?

4. Distribute the graphs to the appropriate groups and explain to the class how a graph can be used to make predictions.

5. Ask the students to analyze the data given in the graphs.

6. Have the students again answer the questions to see how realistic their ideas of the past, present, and future really are.

7. Have each group prepare a presentation to the class using data. This presentation should be based on questions previously asked.

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OPTION #3 cont.

8. Have the class prepare a statement on the future. Include their predictions and suggestions for a better future based upon data given and their graphs. Perhaps this information could be sent to the newspaper.

9. Conclude with discussion.

DISCUSSION QUESTIONS

1. Were we able to predict the future accurately before <u>all</u> data was available?

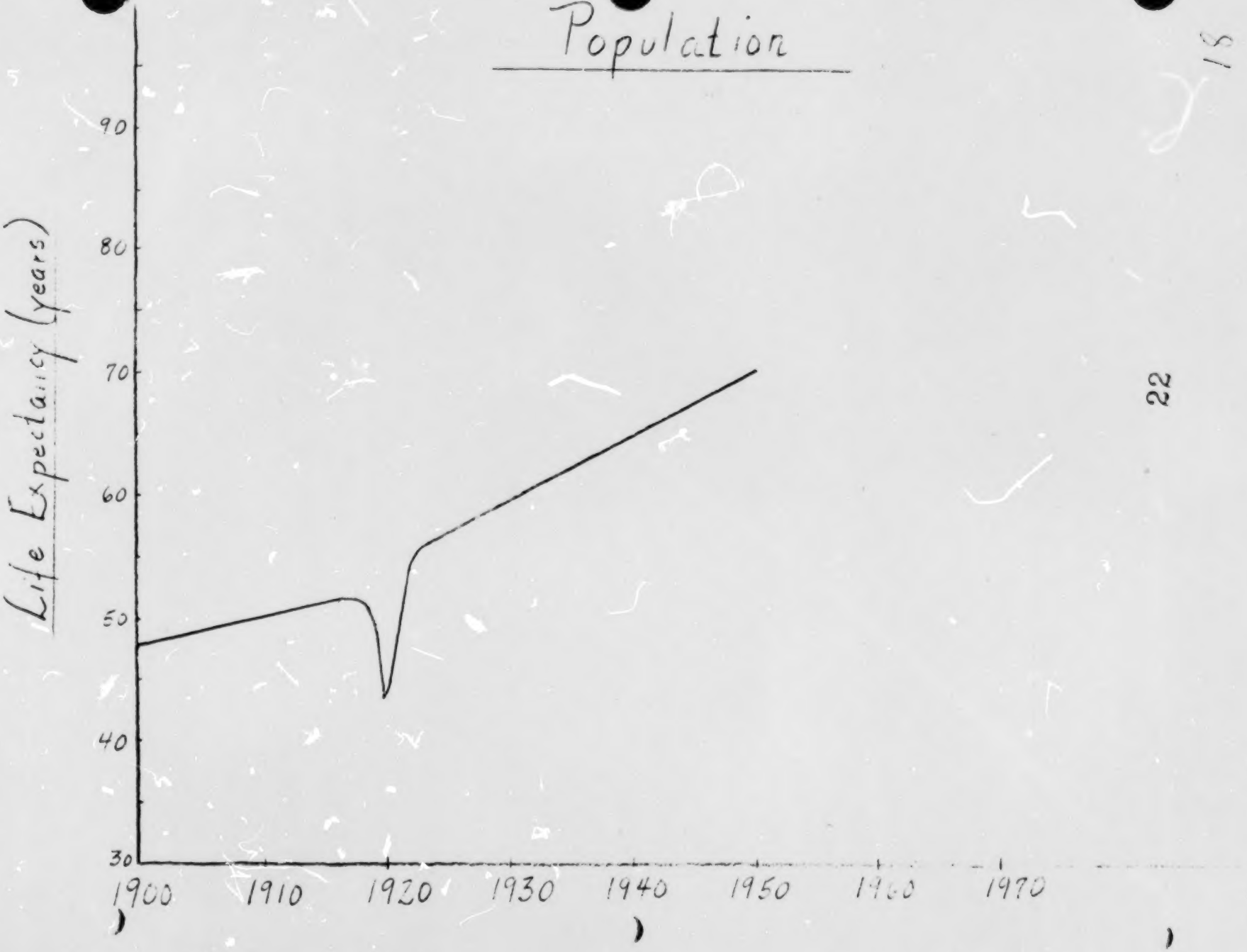
2. Do most people know this information?

3. Did your groups' answers to the questions change after finding out what had happened in the past?

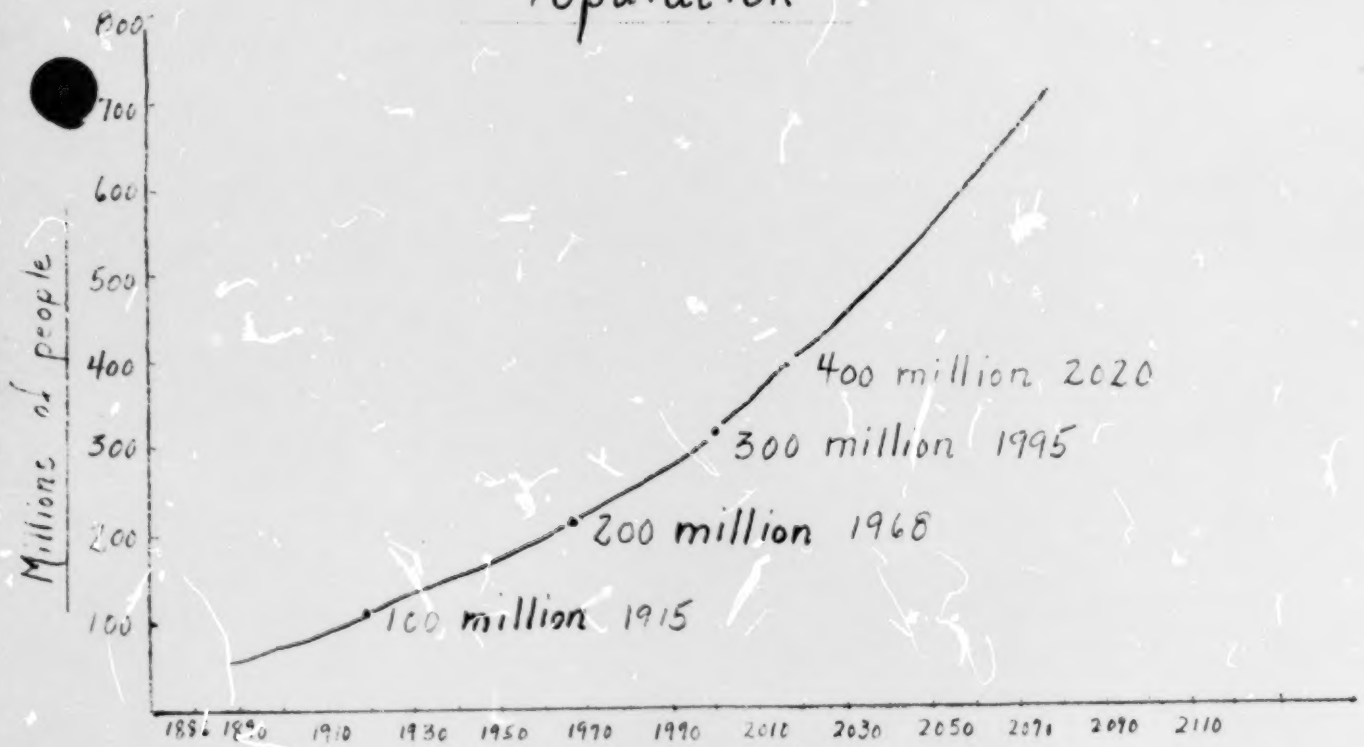
4. Before we make decisions what factors should be considered?

5. Do you think most decisions that are made by government, schools, etc. use history or knowledge of the past to help them make the decisions? Why or why not?

Population

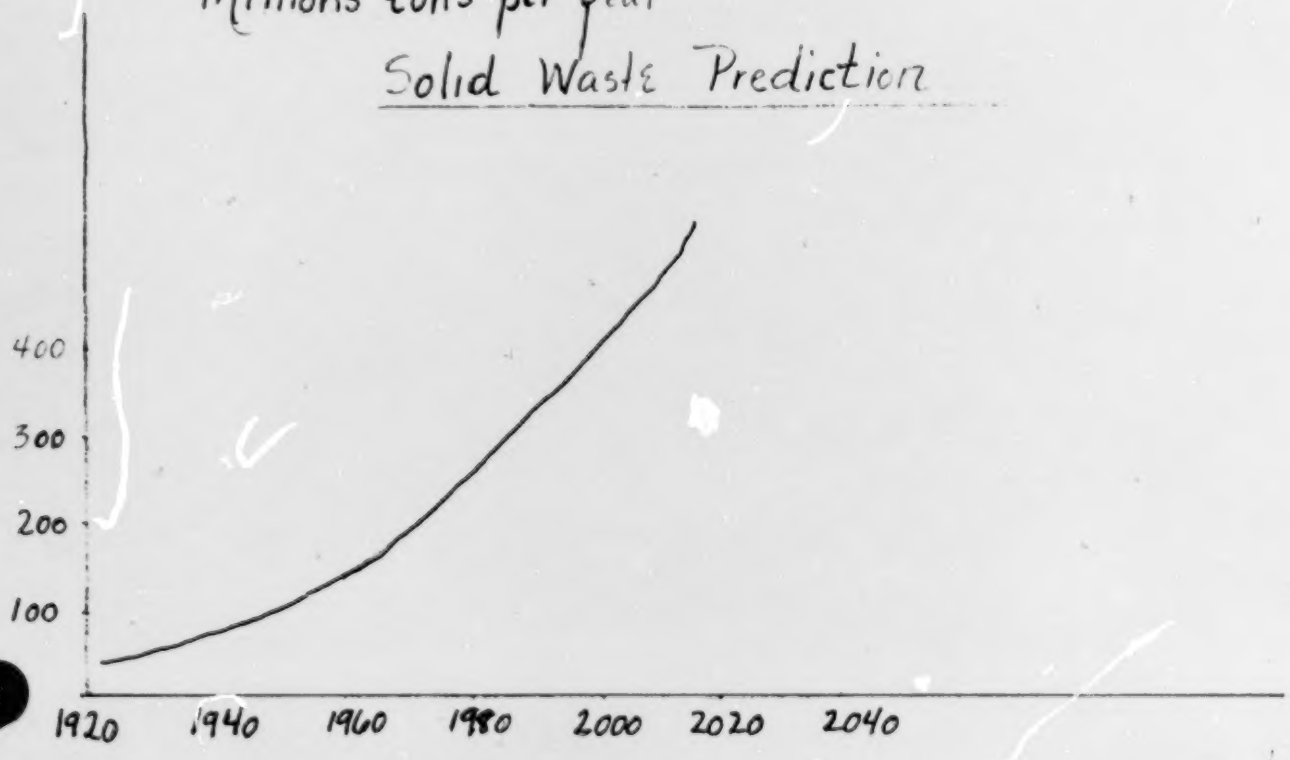

Life Expectancy (years)
90
80
70
60
50
40
30
1900
1910
1920
1930
1940
1950
1960
1970

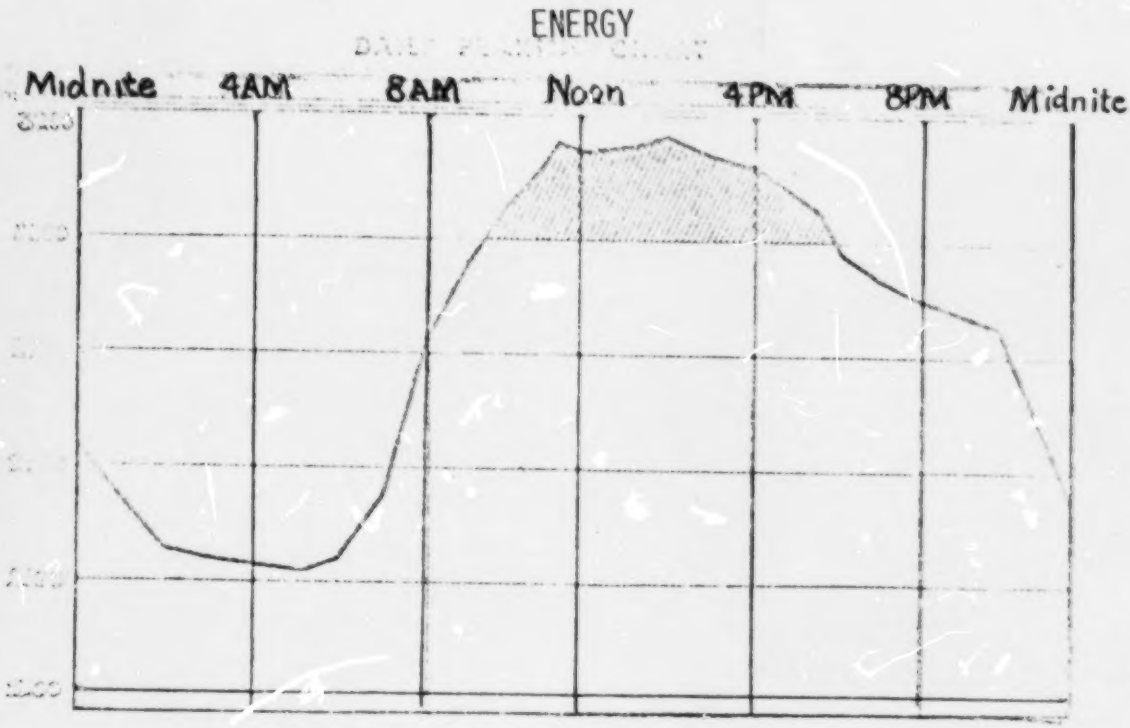
Population



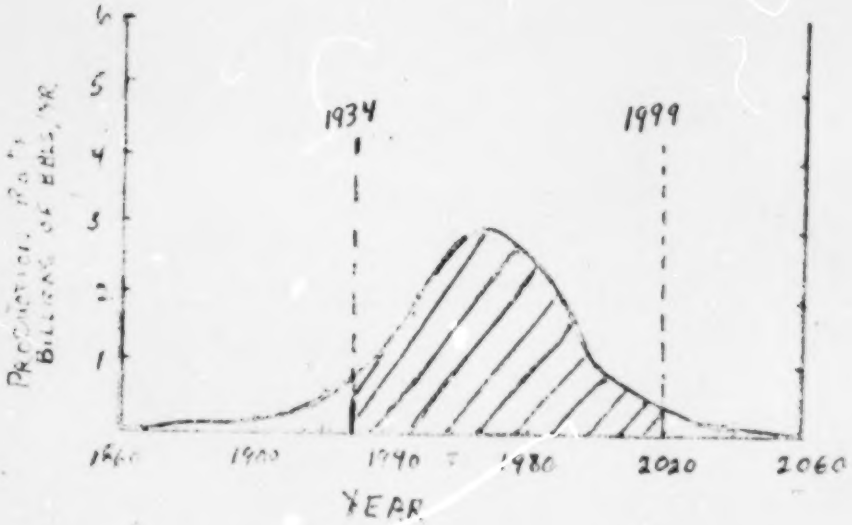
Millions tons per year

Solid Waste Prediction





ELECTRIC PEAKING



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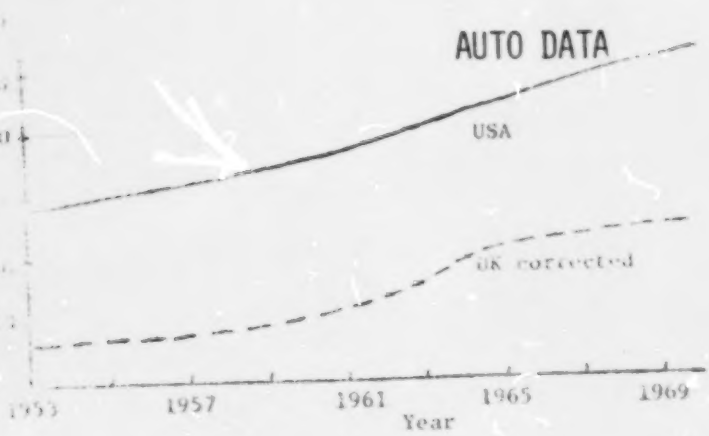

Fig. 4-1 Number of motor vehicles in use in the U.S. and corresponding data for the United Kingdom (adjusted to make total populations equal)

Sample of Auto Safety Regulations

January 1968

Padded dashboard

Energy-absorbing steering column

Recessed knobs on dashboard controls

Lap belts

January 1969

Headrests

January 1970

Steering wheel lock

January 1972

Side marker lights

Braking warning lights

Shoulder harness for passenger beside driver

Warning light and buzzer for front-seat occupants' lap belts

September 1973

Energy-absorbing bumper front and rear

April 1974

Freedom to modify (or disconnect) safety devices

September 1973

Ignition interlock tied to lap belts

Improved bumper standards and uniform bumper

Strength of side door specified

Roof strength at least 1½ weight of car

Flame-retardant interior fabrics

Back light improvement

Recessed knobs for wipers, defrosters

January 1975

Rear seat restraints

Stringent roof standard

	Deaths per 100,000 population, all causes		
	Deaths by accident, per 100,000 population	53.3	51.9
	% of all deaths due to accidents	4.4	5.5
	% of all deaths due to violence	1.4	1.5
	% of all deaths in ground transportation	0.8	2.4

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BEHAVIORAL OBJECTIVE:

At the completion of this unit the student will have made decisons that consider benefits for all socio-economic classes.

SUBJECT AREAS:

Social Studies, Mathematics, Science

KEY WORDS:

Alternatives

State Bonding

OPTION #1 - one to two days

MATERIALS AND RESOURCES

Chart of alternatives

PROCEDURE:

1. Students should be presented the following information:

   a. The state of Illinois is holding public hearings to determine how funds from a recently passed state bonding issue for acquiring outdoor recreation land is to be allotted.

   b. The bonding issue provides 100 million dollars.

   c. The present state alternatives are listed on the chart included in this option.

2. Divide the class into four groups.

3. Give the following information to the appropriate groups:

Group 1 Instructions

a. You represent Chicago.

b. You represent seventy percent of the people of Illinois.

c. Your job is to construct an argument that will convince the state that alternative #4 is the best. Remember you want that 100 million dollars.

d. HINT - Try to anticipate what the other groups might say.

Group 2 Instructions

a. You represent Antioch.

b. You represent the most used recreation area in the state, the Chain O' Lakes.

c. Your job is to construct an argument to convince the state that alternative #3 is the best. Remember you want that 100 million dollars.

d. Hint - Try to anticipate what the other groups might say.

Group 3 Instructions

a. You represent southern Illinois.

b. You represent an area of the state with very little recreational facilities.

c. Your job is to construct an argument that will convince the state that Alternative #2 is the best. Remember you want that 100 million dollars.

d. Hint - Try to anticipate what the other groups might say.

OPTION #1 cont.

Group 4 Instructions

a. You are all members of the state board that will decide which alternative is best.

b. You will listen to each group's argument to help choose an alternative.

c. You will prepare a statement with your decision explaining why you chose the alternative.

4. Have the groups follow the instructions making certain they prepare a good solid argument.

5. After group 4 has made their decision, open for discussion.

DISCUSSION QUESTIONS

1. Do you feel that other alternatives should be considered?

2. Does your decision improve the lives of people from all socio-economic classes?

3. Do all socio-economic classes have access to the proposed recreational facilities?

4. Does your decision take into account differing property values throughout the state?

5. What recreational facilities would be most appropriate for each area?

6. What facilities are most needed in each of the three areas?

7. What age group would most benefit from your proposed recreational facilities?

8. Does your decision take into account future population growth?

9. What effect will the development of a recreation facility have on the surrounding community?

10. Will your decision affect the ecological balance of the proposed areas?

11. Should state recreation funds be used to acquire land within city limits?

OPTION #1 STUDENT INSTRUCTIONS

GROUP 1 INSTRUCTIONS

a. You represent Chicago.

b. You represent seventy percent of the people of Illinois.

c. Your job is to construct an argument that will convince the state that alternative #4 is the best. Remember you want that 100 million dollars.

d. HINT - Try to anticipate what the other groups might say.

GROUP 2 INSTRUCTIONS

a. You represent Antioch.

b. You represent the most used recreation area in the state, the Chain O' Lakes.

c. Your job is to construct an argument to convince the state that alternative #3 is the best. Remember you want that 100 million dollars.

d. HINT - Try to anticipate what the other groups might say.

GROUP 3 INSTRUCTIONS

a. You represent southern Illinois.

b. You represent an area of the state with very little recreational facilities.

c. Your job is to construct an argument that will convince the state that alternative #2 is the best. Remember you want that 100 million dollars.

d. HINT - Try to anticipate what the other groups might say.

GROUP 4 INSTRUCTIONS

a. You are all members of the state board that will decide which alternative is best.

b. You will listen to each group's argument to help choose an alternative.

c. You will prepare a statement with your decision explaining why you chose the alternative.

OPTION #1 CHART 1

STATE ALTERNATIVES

	Land in and around Chicago	Land in Chain O' Lakes area	Land in Central and Southern Illinois
1	34%	32%	34%
2	10%	30%	60%
3	30%	60%	10%
4	60%	10%	30%

OPTION #2

MATERIALS AND RESOURCES

Information cards

PROCEDURE:

INTRODUCTION - Many decisions are made under pressure from lobbies or interest groups representing select people, for instance, oil lobbies, industrial lobbies, and farm lobbies. Government expenditures often follow the interests of the most powerful lobby and directly benefit only that interest group, while being paid for by the general populace who receive minimal or no benefit from the expenditure. This activity is designed to help students evaluate decisions to see who benefits from them and who ends up paying for them.

1. Make up information cards with the SST information on them.

2. Give one information card to each of ten groups of students.

3. Have the class discuss what they have heard about the SST. Presently, the U.S. has stopped construction of the SST, mainly through the efforts of environmental groups. During the discussion have the groups offer their piece of information when the discussion begins to focus on it.

   NOTE: Students should not necessarily role play the information. Just read it.

4. After all ten information cards have been presented along with other opinions and pieces of information from the class, have the class list on the blackboard the pros and cons of approving the construction of an SST for the U.S. to use and sell.

5. The class should now list alternative ways for the U.S. to spend 1½ billion dollars to benefit more people than building an SST (such as mass transit, housing, more recreational areas in cities, etc.). Have each group take the 1½ million dollar chunk and spend it. Explain their reasons.

6. Now have the class vote on the issue of building an SST or using the money for something else. Find out what else.

7. Directly following this activity or at some later date, research and discuss an issue directly relevant to your situation, considering who will benefit from the decision and who will pay for the decision.

DISCUSSION QUESTIONS

1. Who do you feel least/most benefits from construction of an SST?

2. If an SST were built today do you feel you would ever be in a position to use one? If so, how long do you think it would be before you did use one?

3. Who do you think was pushing the strongest for an SST? Who opposed it most strongly?

4. Is it important for the U.S. to compete with other large countries all the time?

OPTION #2 cont.

5. Should the U.S. try to have the fastest, most luxurious mode of air transportation simply to be able to say we have such an aircraft?

6. Realizing that 40 percent of the people who live in large cities such as New York, Detroit, and Chicago don't have access to an auto, how could the U. S. government more justly spend tax monies on something like an SST?

7. Which people have the least power in influencing major decisions like the SST and who have the most power? Compare these with who you felt benefits least and most from major decisions.

8. What kinds of employment can you think of in which the workers never or rarely use or benefit, other than their job wages, from the product they make?

9. Are there examples of other ways the government spends money that might not be considered "for the common good"? For example, $150,000 to determine why the average college student falls in love.

OPTION #2 INFORMATION CARDS

1. SST's can fly much faster than present commercial airplanes. Passengers on an SST could fly from the United States to Europe three to four hours faster than on present airplanes.

2. Building an SST in the U.S. would enable the U.S. to keep pace with other large countries (Russia, France, England) in future air transport. Other countries are already building SST's and will take over the market from the U.S. in rapid-air transportation.

3. Construction of SST's will provide thousands of jobs for people. The U.S. economy will benefit directly, especially when other countries begin buying our SST's.

4. The SST generates less pollutants per passenger mile than most other transportation alternatives.

5. SST's cause sonic booms (when airplanes travel faster than speed of sound) all along their routes.

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6. Most experts feel that SST exhausts will disrupt the fragile layer of ozone gas surrounding the earth. Ozone prevents damaging ultra-violet light from reaching the Earth.

7. Only a small number of people will benefit directly from SST construction:

   a. Only six states will benefit economically from SST construction while forty-four states will lose money.

   b. Only people in higher economic classes can afford to fly on an SST. Poorer groups of people will probably not be able to use them.

8. The SST will use twice as much fuel as the larger capacity Jumbo Jets (like the 747's) for the same distance flight.

9. Building the SST-prototypes will cost near 1½ billion dollars. These are just the test models.

10. The newly constructed British SST, CONCORDE, is not selling. Presently, there is little or no market for the SST.

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OPTION #3

MATERIALS AND RESOURCES

Questionnaire forms

PROCEDURE:

1. Have the class choose a few topics of interest to question the community. Examples of topics are listed below:

   Bottle law - deposits made on all beverage containers
   Home rule - Lake County
   55 MPH speed limit
   Seat belts
   Increased defense spending
   SST

2. Distribute the sample questionnaire (Chart I).

3. Have the students prepare and distribute the questionnaires.

4. As the information comes in, have the students categorize the responses as shown below:

% of under 21 - pro and con	% of unmarried - pro and con
% of under 35 - pro and con	% of no high school grads - pro and con
% of 35-65 - pro and con	% of high school grads - pro and con
% of married - pro and con	% of college grads - pro and con

5. Open for discussion when most questionnaires have been returned.

DISCUSSION QUESTION

1. Are there any trends that we have seen between the different variables?

2. What factors have influenced the decisions of our groups?

3. Of the groups polled which ones influence the actual decisions, i.e. does a high school student or a college graduate have more influence?

4. What groups would benefit the most out of the majority decisions? Poor or rich? Educated or non-educated?

5. How would you decide on each of the above questions if you had to make a decision?

OPTION #3 CHART I

QUESTIONNAIRE FOR _____

Answer the following questions. DO NOT INCLUDE YOUR NAME.

1. AGE
2. SEX M F
3. MARITAL STATIUS: Married Unmarried
4. Number of children:
5. Educational level: High school College
6. Are you in favor of _____ Yes No
7. Should the government be involved in _____ Yes No
8. Do you see any value in _____ Yes No
9. Would you make the necessary sacrifices to support _____

_____ Yes No

BEHAVIORAL OBJECTIVE:

At the completion of this unit the student will be able to identify some environmental abuses, who causes them, and who can initiate corrective action.

SUBJECT AREAS:

Social Studies, Science, English

OPTION #1- Spring or Fall

MATERIALS AND RESOURCES

Science:

Millipore apparatus and instruction booklet
Decibel meter
Secchi disk
Cameras and film

Social Studies:

Large paper
Colored pencils
Census study

PROCEDURE:

PART I

1. The students can get the samples on the weekend and bring their materials to class on Monday.

2. Assign groups of students to check various areas in the area for possible environmental abuse. Checks should be made on Weds and Fri.

   a. Group 1 - Obtain water samples from specified locations. Make a coliform count using the millipore method.

   b. Group 2 - Using a secchi disk, determine the relative turbidity of the water.

   c. Group 3 - Select various locations and find evidence of litter. Document with figures and photos.

   d. Group 4 - Select various areas and using a decibel meter, determine the level of noise pollution at certain points.

   e. Group 5 - Develop a census of the human use of given areas such as beaches, lakes, etc. Use figures and photos.

   f. Group 6 - Invesitgate the garbage accumulation around homes or resorts. How much garbage accumulates? How fast does it accumulate? What does most of the garbage consist of?

PART II

1. Have the students map out a lake or river. Mapping skills can be used here to develop a very large map.

2. Students can conduct surveys of homeowners on the lake which point to their total frustration with weekend recreation use.

   a. Students should try to determine the amount of outside use on the weekend.

   b. Station students at the entrance to resort areas, such as boat ramps.

OPTION #1 cont.

3. The surveys can be put into some type of visual report, on maps, in a graph, etc.

PART III

One of the following writing exercises may be used to reinforce various concepts brought out in earlier portions of this unit.

1. Have several groups of students seek out radically different environments in a lake region; that is, a quiet day in some remote area, a dock at a busy marina, or perhaps the channel. Have the students "absorb" the environment for a time and then compose mood pieces in poetry or prose. Compare the results. It will be interesting to determine the psychological, emotional, or intellectual effects that these very different settings have had on the resulting creations. The negative effects of "environmental abuse" will probably be reflected in some of the writings.

2. Based upon an investigation of environmental abuses in the lakes area, have the students write an analytical paper showing why action on the local level has been relatively ineffective.

3. If they wish to explore the art of persuasion, they may write an essay showing what measures can be taken on the local level to bring about change and conclude with a plea for the early implementing of those measures.

DISCUSSION QUESTIONS

PART I

1. What does the coliform count indicate concerning the quality of the lake water?

2. Is the turbidity of the water affected by heavier use on weekends?

3. Does litter seem to accumulate slowly or rapidly? What does your answer infer?

4. Is noise pollution a problem?

5. Does the use of the lake by humans appear to be heavy?

6. Are you able to see a correlation between the lake use and the negative environmental manifestations?

7. What percentage of people using the lake are local residents? Estimate.

8. To what extent are the local residents able to effectively correct the problem that exists? The local government? The state? The federal government?

PART II

1. What is the average length of time people have lived around the lakes? Have the lakes deteriorated?

2. Who uses the lakes? What distance do they come from? Do these people care about their impact on the lake?

3. Who gets hurt the most by the pollution level?

OPTION #1 cont.

4. Who controls the area? Do the people in the area have any power to regulate the use of the water?

   NOTE: To evaluate the student, one can have essays written on all or one of the discussion questions and determine the degree of sophistication gained by the individual.

FURTHER ACTIVITIES

1. Students should also determine where the politicans who represent us live. Show this on the map and try to determine if they can possibly represent the people on the lakes.

2. Students should write to the state to find out the types of laws being passed that regulate the use of the chain.

3. Students can conduct a photo-taking project comparing weekend to weekday use of the chain.

4. From the data gathered students should try to determine the ecological impact on the lake, the problem-solving power of the lakes people and try to determine if they are represented or not. Who pollutes? Who controls?

OPTION #1 CENSUS STUDY

How long have you lived here?

Would you say the quality of the lake has increased/decreased since you have been here?

What do you feel is the main reason for the decline?

Do you know who represents you in Congress, state and/or federal?

Does he seem to understand the problem?

What kind of limitations on water use can you suggest?

Where are you from originally?

How long do you intend to stay here?

OPTION #2 - no specific materials - Spring or Fall

PROCEDURE:

1. Students will be taking surveys of different environmental abuse areas within the community.

2. These areas might be as follows:

   a. area of traffic congestion

   b. park with a high concentration of litter

   c. industrial site with air and noise pollution

3. Divide the class into as many groups as needed to cover the areas of abuse.

4. Have each group survey their area and learn the appropriate information.

   For example: TRAFFIC AREA

   Number of cars per minute/hour
   Time of day of heaviest concentration
   Number of accidents or near misses
   General flow of traffic
   Noise level

   PARK AREA

   Amount of litter
   Type of litter
   General area(s) of heaviest concentration

5. After the groups have surveyed their areas, have them identify who in the community is responsible for solving the problem.

6. Have the students contact these individuals or groups to see what is being done. Perhaps the students might suggest their own solutions.

7. After these responses, analyze the decision-making process.

DISCUSSION QUESTIONS

1. Were you aware of this problem before you did your survey?

2. Were the people in the community aware of the problem?

3. What type(s) of solutions were proposed by the community leader?

4. Do you believe that the solutions were enforceable: If not, how might they be broken?

5. What else is needed to make them enforceable?

6. Is it ever possible to make totally enforceable laws?

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OPTION #3

MATERIALS AND RESOURCES

FS/C The Problems: What Can We Do
FS/C Land: Blighted or Bountiful
Set of problem study prints
} Our Environment: Problem or Promise / Nystrom & Company

PROCEDURE:

1. The unit should direct the student to the conclusion that the ultimate responsibility for correcting environmental abuse is individual action.

2. Show one or more of the filmstrips listed above. The particular one chosen is not as important as the idea that we must get the students in the frame of mind where they can visualize environmental abuse.

3. Divide the blackboard into two sections. On one side place some environmental abuses.

   For example: oil slick, stripmine

   On the other side place some occupatiosn and/or people that make up the society.

   For example: Politician, bank president, gas station attendant, doctor, ecologist, John Q. Public (you, the individual), truck driver

4. Have the students take the problem - the oil slick - and rank order those persons or occupations that have the most influence and/or responsibility to the least.

   For example: Students might list for oil slick -

   1. Ecologist
   2. Politican
   3. Bank president
   4. Truck driver
   5. Gas station attendant
   6. Doctor
   7. John Q. Public

5. Take a vote of the class to learn the general class opinion. Place results on the board so that discussion is centered around that list.

6. Have the students take each abuse presented and rank each person as they did with the first abuse.

7. Once all votes have been taken, open for discussion.

DISCUSSION QUESTIONS

1. Why did we rank the individuals in the order that we did?

2. What can each of these individuals do to help correct environmental abuse? How?

OPTION #3 cont.

3. Why should each of these individuals feel responsible for environmental abuse?

4. Do you believe that they do feel responsible?

5. How can you, as an individual, aid in correcting abuses? Would you do what is necessary?

6. How much responsibility do you feel toward each of the listed abuses? Why?

BEHAVIORAL OBJECTIVE:

At the completion of this unit the student will illustrate his awareness that some people and organizations have more power than others to influence decisions.

SUBJECT AREAS:

Social Studies, Language Arts

OPTION #1 - no specific materials

PROCEDURE:

1. Divide the class into groups of three or four students.

2. Take a number of different decisions to be made in school and have the students list those who have the most influence to those who have the least influence in the decision-making process.

   Example #1 - Gum Chewing - YES or NO

   #1 - Janitor
   #2 - Principal
   #3 - Teacher
   #4 - Cooks
   #5 - Students

   Example #2 - Menu Choices

   #1 - Cooks
   #2 - Principal
   #3 - Teachers
   #4 - Students
   #5 - Janitor

   Example #3 - Student Schedules

   #1 - Principal
   #2 - Teacher
   #3 - Students
   #4 - Janitor
   #5 - Cooks

3. Have different students play the roles of the people who they list as having influence in the decision-making process.

4. Ask them to portray their roles as realistically as they can envision them and then debate each issue.

5. Have the students attempt to come to some final "decision" on each matter.

DISCUSSION QUESTIONS:

1. Is there a group or individual who seems to have a great influence on decisions?

2. Is there a group or individual who has very little influence?

3. What are some of the reasons for these discrepancies?

4. Is it necessary for the few individuals to influence the decision in order for effective decision-making?

5. What possibly could happen if the powerful individuals did not recognize the needs of the majority?

OPTION #1 cont.

6. Can we list some components of the decision-making process?

7. As you played the roles, did you feel that this was really the way the people you portrayed would act?

OPTION #2 - three days

MATERIALS AND RESOURCES

Fifteen poker chips
Phonograph
Two phonograph records, one rock music and the other classical
Standard textbook
Various magazines covering movies, news and motorcycles

PROCEDURE:

1. Pick five students out of the class and give them three poker chips apiece and explain that their chips will be used to "buy" classroom activity for the next three days. These five students should be told in advance that on the first day, they will buy classical music, on the second day they will buy the textbook, and on the third day they will buy a study period.

2. On the first day inform all the students they have a choice between listening to classical music or a number of different rock groups.

3. Have the class vote on what they like. The five students previously chosen should vote for classical and will then turn in one poker chip each. Therefore, classical music will be played.

4. The second day tell the class they must decide among reading the textbook, movie magazines, or other magazines. Again the class votes and again the five vote for the textbook. They turn in one poker chip each and the textbook is read.

5. On the third day the class must vote on whether to have a quiet study period, do nothing, or go outdoors and play softball. Again the five vote on a study period and turn in their last chips. Instead of a study period, however, begin discussion.

DISCUSSION QUESTIONS

1. Has most of the class had a chance to participate in the decision-making process?

2. How many people have had a chance to influence the decision?

3. What has been the obvious difference between the five and the rest of the class?

4. Does this in any way simulate real life decision-making? Have the students share ideas and discuss a few of them.

5. Does school reflect the overall power of individuals to make decisions?

6. Who makes decisions in schools?

7. Is it good or bad that a few individuals usually make decisions for many?

8. Is our government based on the idea that a few can make decisions for many?

9. Is it ever bad that few people influence decisons? Give examples.

OPTION #3 - openended

MATERIALS AND RESOURCES

Film, "The Role of the Interest Group Leader"
Stationery, envelopes, and stamps

PROCEDURE:

1. Show the film listed above.

2. Divide the class into groups of three or four.

3. Have each group write a state or federal government lobby and simply ask what their role in government is and how they influence governmental policy.

4. Listed below are a few suggested groups:

   National Rifle Association
   Milk Foundation
   NEA - National Education Association, 10600 W Higgins, Rosemont, Il
   AMA - American Medical Association, 535 North Dearborn, Chgo, Il
   ABA - American Bar Association, 1155 East 60th, Chgo, Il

5. As information is received, open for discussion.

DISCUSSION QUESTIONS

1. What are lobbies for?

2. Do you believe they influence government?

3. Is it good we have these groups?

4. Is the other side ever heard in government?

5. List the ways in which the Sierra Club lobbyists influenced the congress?

6. How might a lobbyist's point of view be ignored by the majority of congressmen?

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BEHAVIORAL OBJECTIVE:

At the completion of this unit the student will be able to define and illustrate an enforceable decision.

SUBJECT AREAS:

Social Studies, Biology

OPTION #1*

MATERIALS AND RESOURCES

Scrap paper
Books
Pencils
General classroom litter

PROCEDURE:

1. Prior to class time, the teacher should completely mess the room up - the floors, walls, etc with the materials listed above.

2. When the students are in class define the obvious problem. Ask for suggestions on how to solve the problem. Perhaps a committee can be formed to investigate the problem and provide solutions to it.

3. Prior to the next class period, prearrange with three to four students to again mess up the room.

4. When the class is seated have them discuss the obvious problem and why it has recurred without letting on of the prearrangement. Ask the students for a quick solution.

5. Have the students make up new rules or ways to solve this problem.

6. Keep up the cycle until it becomes necessary to make very strict enforceable rules.

7. Distribute decision-making process Chart I and explain its use.

8. Divide the class into small groups and have them work through Chart I.

DISCUSSION QUESTIONS

1. Investigate the decision-making process. Has our attitude toward the problem changed?

2. Have our rules changed? In what way?

3. Why were our rules non-enforceable at first?

4. What did we have to do to make them enforceable?

5. Do we have to go to extremes to solve our environmental problems?

6. How much impact can one individual or one company have on the environment?

*NOTE: This unit can be used in conjunction with Technology 9, option #3.

OPTION #1 CHART 1

PROPLEM-SOLVING

1. DEFINE THE PROBLEM (NOT THE SYMPTOM):

2. LEARN ABOUT THE PROBLEM (WHAT ARE THE FACTS AND EMOTIONS):

3. IDENTIFY ALL THE ALTERNATIVES:

4. SELECT THE MOST WORKABLE ALTERNATIVE:

5. DEVELOP A PLAN OF ACTION (HOW DO WE SOLVE THIS):

6. IMPLEMENT THE PLAN (SOLVE THE PROBLEM):

OPTION #2 - no specific materials

PROCEDURE:

1. Set up a hypothetical population problem. Country X has population which is increasingrrapidly. The large population and relatively small area has produced a low socio-economic climate. There is a high unemployment rate. Food production is limited. The culture and beliefs of the people have dictated large families. Most children are educated through the eighth grade. The people enjoy a very simple way of life. The government believes that massive problems are imminent. Overcrowding, starvation, unrest, etc. are likely.

   NOTE: The instructor should list the following on the blackboard:

   a. Increasing population

   b. Large population

   c. Small land area

   d. Production limited

   e. High unemployment

   f. Education only through eighth grade

   g. Massive problems imminent

      (1) overcrowding
      (2) starvation
      (3) unrest

2. Divide the class into groups of four or five. Ask each group to propose a list of laws that will help solve the problems that exist.

3. Have each group present their set of laws to the class.

4. Select a number of the laws that you feel will lead to a lively debate.

5. After the class has heard the laws presented and debated the various laws, compile a master list of laws that this society will have to follow.

DISCUSSION QUESTIONS

1. Could you, as an individual, live under the present laws?

2. Are there any laws we have enacted that are similar to our existing laws?

3. Are there any laws which are against our basic assumption of individual freedom?

4. Does the individual have freedom in Country X?

OPTION #2 cont.

5. Would any of the problems that exist in Country X be similar to problems we have today?
6. Are we dealing with these problems in a way similar to your suggestions?
7. What if the people of Country X refuse to accept these laws?
8. Do we need some extra ingredient to make the laws enforceable?
9. List ways that our society enforces its laws.
10. How might you convince the people of Country X that these laws are needed?

OPTION #3

MATERIALS AND RESOURCES

Newspaper or magazine clippings on a controversial issue, for example, housing, roads, economy, etc. (Try to identify a local issue.)

PROCEDURE:

Nearly every area has a controversial issue in its community. Gather as many facts about the controversy as possible from local authorities. Obtain background materials. Try to anticipate all factors that might eventually bear on the issue.

1. Define the factions involved in the controversy.

2. What decision has each faction made? What is their position?

3. Interview a member of each faction and determine whether or not they have weighed all the facts?

   a. Why has A taken its position and continue on for each interest group.

   b. What other alternataives, if any, does each group have?

   c. How does the cost of alternative plans enter in?

   d. Will the issue present any special problems?

   e. Is the decision politically motivated?

   f. Was the decision realistic in light of all the facts accumulated? What makes the decision enforceable or unenforceable?

   g. Does the decision consider the needs of all people?

FURTHER ACTIVITIES

1. Have the students investigate some new industry and its impact on the environment. Have them suggest rules to enforce laws to protect the environment.

2. Have the students investigate governmental agencies and laws to protect the environment. Are they enforceable?

OPTION #3

CHART 2

FACTION CHART

FACTION B

FACTION A

FACTION C

FACTION D

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